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| (21) International Application Number: PCT/FI95/00254 (22) International Filing Date: 12 May 1995 (12.05.95) (30) Priority Data: 942215 13 May 1994 (13.05.94) FI (71) Applicant (for all designated States except US): TELECOM FINLAND OY [FI/FI]; Sturenkatu 16, FIN-00511 Helsinki (FI). (72) Inventor; and (75) Inventor/Applicant (for US only): LAHTI, Aapo [FI/FI]; Pursimiehenkatu 25 B 38, FIN-00150 Helsinki (FI). (74) Agent: LAHTI, Heikki; Telecom Finland OY, P.O. Box 106, FIN-00511 Helsinki (FI). | | (81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG). Published <i>In English translation (filed in Finnish). Without international search report and to be republished upon receipt of that report.</i> |
| (54) Title: METHOD FOR CALLING BY A TERMINAL, LIKE A CARD CONTROLLED MOBILE STATION, OF A MOBILE COMMUNICATION SYSTEM | | |
| (57) Abstract <p>The invention relates to method for calling by a terminal, like a card controlled mobile station, of a mobile communication system, in which method the terminal is controlled by a SIM-card and the subscriber is identified from data of the said SIM-card. Characteristic for the invention is that by attaching a mobile station to special teleterminal adapter a local subscriber status is given to the mobile terminal.</p> <div></div> | | |

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In order to accomplish the same the method according to the invention is mainly characterised in that presented in the characterising part of the claim 1.

New registers would not necessarily be needed in the mobile telephone centre. As a special embodiment a wireless local access could be accomplished, for which also a mobility is served as an additional feature. Further, as an advantage of the invention can be mentioned that the same is not bound with a network design, the same can be realised with low investments (no cable installations), because only the charging is renewed by utilising an ordinary method of chaining up. At the terminal side is not needed high investments. When desired a CT (wireless) telephone option can be joined with the terminal, whereby mobility is achieved also in the location where the device is placed. It becomes possible to serve to the telephone user more places, where different charges for example at home, summer residence etc. are possible compared with that when the mobile terminal is used as being detached from the device.

The invention is described in the following referring to the accompanying drawing, where

FIG. 1 illustrates the method according to the invention, when the mobile station attached to the device,

FIG. 2 illustrates function according to the invention, when the mobile station is detached from the device.

In the figure 1 the mobile station MS is attached to a teleterminal mediator, in the following the adapter, for example via a serial gate. The SIM 1 of the adapter controls the mobile station via a bus thus accomplished. Then the mobile telephone subscriber is provided by local subscriber characteristics and the mobile station-teleterminal adapter assembly is composed of the MS and adapter. When needed several terminals can be attached to the adapter. When the MS is attached to the adapter the IMSI 1 - data of the adapter is activated by overtaking the IMSI 2 of the MS, which is at the same deactivated (deactivation is not essential, depends on an application, other ways can be used). Then the calls made by the MS via the adapter are directed to the IMSI 1-charging data of the adapter. When the MS is detached from the adapter, the IMSI 1 of the adapter is deactivated or gets deactivates and the IMSI 2 of the SIM 2 of the MS is activated or get activated. Then the calls dialled from the MS are directed to the IMSI 2 charging data of the

Method for calling by a terminal, like a card controlled mobile station, of a mobile communication system.

The invention relates to a method for calling by a terminal, like a card controlled
5 mobile station, of a mobile communication system according to the preamble of the claim 1.

In the system a connection can be accomplished between two subscribers, at least two of which is a mobile terminal. In a mobile communication system a message transmission is two directional and therefore the connection is accomplished between a A-subscriber and a B-subscriber. In the mobile communication system the centre is informed all the time about the loca-
10 tions of those phones, to which a call can be routed. Normally a call to a phone is made to a phone such that the A-subscriber dials a telephone number. The centre transmits a signal to the telephone of the B-subscriber. Depending on whether the B-subscriber has answered, not answered, busy or off the call is switched when the B-subscriber answers.. Generally the mobile communication systems includes mobile telephone stations, at least one base station, which is provided for communi-
15 cation with a mobile telephone by a radio channel, and which has of a limited coverage area, at least on mobile telephone centre, which is provided for mobile telephone services, and which is capable to be interactive with telephone switching centres or branch exchanges.

When a call is made by a digital mobile telephone, the telephone is controlled by a card inserted into the telephone and the subscriber is identified from the data of the SIM-card in-
20 serted into the terminal, which data include the international mobile subscriber identity IMSI. In the card-controlled mobile terminals the international subscriber identity is dependent on the card. Thus the subscriber is identified based on the data if SIM-card inserted into the mobile terminal but not on the terminal itself. The SIM-card may be a circuit card mounted stationary at the terminal or a small card or a big card having a size of a credit card, at which is joined the small card,
25 detachable from the mobile terminal.

The aim by the invention is that any normal mobile telephone subscriber could call both mobile calls ordinarily and as placed to a certain location calls as a local subscriber via the same mobile station equipment or by the same telephone equipment calls of two types, which can be separated in the charging or another corresponding facility.

identity than the one of the home cell the continuation of the usage of the IMSI 1 of the adapter is deactivated,

- f) the usage of the adapter is restricted inside only one so called home cell by means of a closed SIM. It is commonly known that within the radio network managed by a teleoperator the coverage areas of the base station overlap more or less each other and in the same time the radio networks managed by the teleoperators overlap each other. This feature in the radio network can be utilised for accomplishing a closed SIM such that base station configuration characteristic for a chosen use location or region is stored into the adapter and the same can be updated automatically at fixed time intervals. Into the said base station data is included as the first data the configuration of the base stations of managed by the teleoperator of the subscriber and as the second data the configuration of the base stations managed by other teleoperators. Then it is clear that in case both the first data and second data are alternated in the same time the adapter has been transferred, whereby the adapter destroys or prevents continuation usage of the IMSI 1 associating to the adapter. In this connection there is a reason to mention that the arrangement makes possible any change, repairing, improvement etc. activities, because then at a time is changed only either the first data or the second data.

It is possible that to the adapter is attached a telephone receiver or a wireless telephone device which are workable when the mobile station MS is placed to the adapter.

- 20 The adapter can include different functions like charging, several receiver stations for telephones.

The invention is described above only by means of one preferred embodiment thereof and as it is evident to a skilled in the art several modifications and variations are possible within the scope of inventive idea defined in the attached claims.

MS. Thus the calls can be separated from each other and they can be priced at the charging in different ways depending on whether the MS is attached to the adapter or detached therefrom. The adapter is a device, which includes the SIM-card having the IMSI-data, and which is capable to control the mobile station attached to the device and to sent into a network the IMSI-data. The 5 calls coming to the mobile station are directed to the mobile station independing on whether the communication station is attached to the adapter or detached therefrom. In case the communication station is detached and a call is coming to the number according to the IMSI of the adapter, the call is nevertheless directed to the mobile station in a normal way. The radio interface is marked by the number 1.

10 In the figure 1 is illustrated the local subscriber state for the mobile telephone subscriber, therein the IMSI 1 is "on" or activated and in figure 2 the mobile subscriber state for the mobile telephone subscriber respectively, wherein the IMSI 2 is on or activated.

Several MS can be joined in series by chaining up. In practise it may be not reasonable to chain up more than two MS.

15 At the network site the service is accomplished by chaining up IMSI:s (international mobile subscriber identities). The subscriber himself can use one or several numbers (mobile telephone multiservice network, MSISDN is the mobile subscriber international ISDN number) depending on what kind of a service he prefers.

In order to prevent any misuse, i.e. removal of the adapter from its location or outside the agreed region,

- a) the size of the adapter is made big enough,
- b) current input is utilised by a network current solution,
- c) the adapter is without an antenna of its own but a stationary, for example a wall or roof antenna is attached thereto for accomplishing radio transmissions,
- 25 d) the adapter is provided with a motion or acceleration sensor, which when a limit adjusted therein is exceeded destroys the circuit or SIM-card of the adapter comprising the circuit- and/or IMSI 1-data,
- e) the usage of the adapter is restricted inside only one so called home cell by means of a closed SIM, whereby the radio network monitors the signal data associating to the IMSI 1,
- 30 and if the network senses with the communication transmission in the network any other

10. Method according to anyone of the preceding claims 1-6, **characterised** in that to prevent moving of the teleterminal adapter, i.e. shifting away from its selected location or outside an agreed region, the adapter is provided with a motion or acceleration sensor, which when a
5 limit adjusted therein is exceeded destroys the circuit or SIM-card of the adapter comprising the circuit- and/or IMSI 1-data.

11. Method according to anyone of the preceding claims 1-6, **characterised** in that to prevent moving of the teleterminal adapter, i.e. shifting away from its selected location or outside an agreed region, the
10 the usage of the adapter is restricted inside only one so called home cell by means of a closed SIM, whereby the radio network monitors the signal data associating to the IMSI 1, and if the network senses with the communication transmission in the network any other identity than the one of the home cell the continuation of the usage of the IMSI 1 of the adapter is deactivated.

12. Method according to anyone of the preceding claims 1-6, **characterised** in that
15 to prevent moving of the teleterminal adapter, i.e. shifting away from its selected location or outside an agreed region, the usage of the adapter is restricted to a certain point or region by means of a closed SIM such, that a base station configuration characteristic for a chosen use location or region is stored into the adapter, that into the said base station data is included as the first data the configuration of the base stations of managed by the teleoperator of the subscriber and as the sec-
20 ond data the configuration of the base stations managed by other teleoperators, and that when both the first data and second data are alternated in the same time continuation usage of the IMSI 1 is deactivated.

CLAIMS

1. Method for calling by a terminal, like a card controlled mobile station, of a mobile communication system, in which method the terminal is controlled by a SIM-card and the subscriber is identified from data of the said SIM-card, characterised in that for accomplishing a preferably otherwise rateable communication service based in addition to a mobile terminal facility to an essentially immobile terminal facility, in the method is used a teleterminal adapter being essentially stationary of its location or transferable only inside a predefined region, which adapter possesses a separate SIM-card or a corresponding and is attachable to the mobile station, that by connecting the mobile station to the teleterminal device is accomplished a teleterminal device-mobile station assembly, which is essentially stationary of its location or transferable only inside a predefined region, the SIM-card of the mobile station is deactivated and the SIM of the teleterminal device is activated, and that the control logic of the mobile station is activated and in the mobile telephone network the user is identified from the data of the SIM-card of the activated teleterminal adapter.

2. Method according to the claim 1, characterised in that one, two or several mobile stations are attachable to the teleterminal adapter.

3. Method according to anyone of the preceding claims, characterised in that the teleterminal adapter includes a battery charger.

4. Method according to anyone of the preceding claims, characterised in that between the mobile station and the SIM-card of the teleterminal adapter is accomplished a data transmission bus.

5. Method according to anyone of the preceding claims, characterised in that the data of the SIM-card include at least the international mobile subscriber identity, IMSI.

6. Method according to anyone of the preceding claims, characterised in that the IMSI:s given to the same subscriber are chained up.

7. Method according to anyone of the preceding claims 1-6, characterised in that to prevent moving of the teleterminal adapter, i.e. shifting away from its selected location or outside an agreed region, a size of the adapter is made so big that with-carrying is embarrassing.

8. Method according to anyone of the preceding claims 1-6, characterised in that to prevent moving of the teleterminal adapter, i.e. shifting away from its selected location or outside an agreed region, current input of the adapter is accomplished by a line current solution.

9. Method according to anyone of the preceding claims 1-6, characterised in that to prevent moving of the teleterminal adapter, i.e. shifting away from its selected location or outside an agreed region, the adapter is connected for using the same with an external antenna, like a wall or roof antenna.

1/2

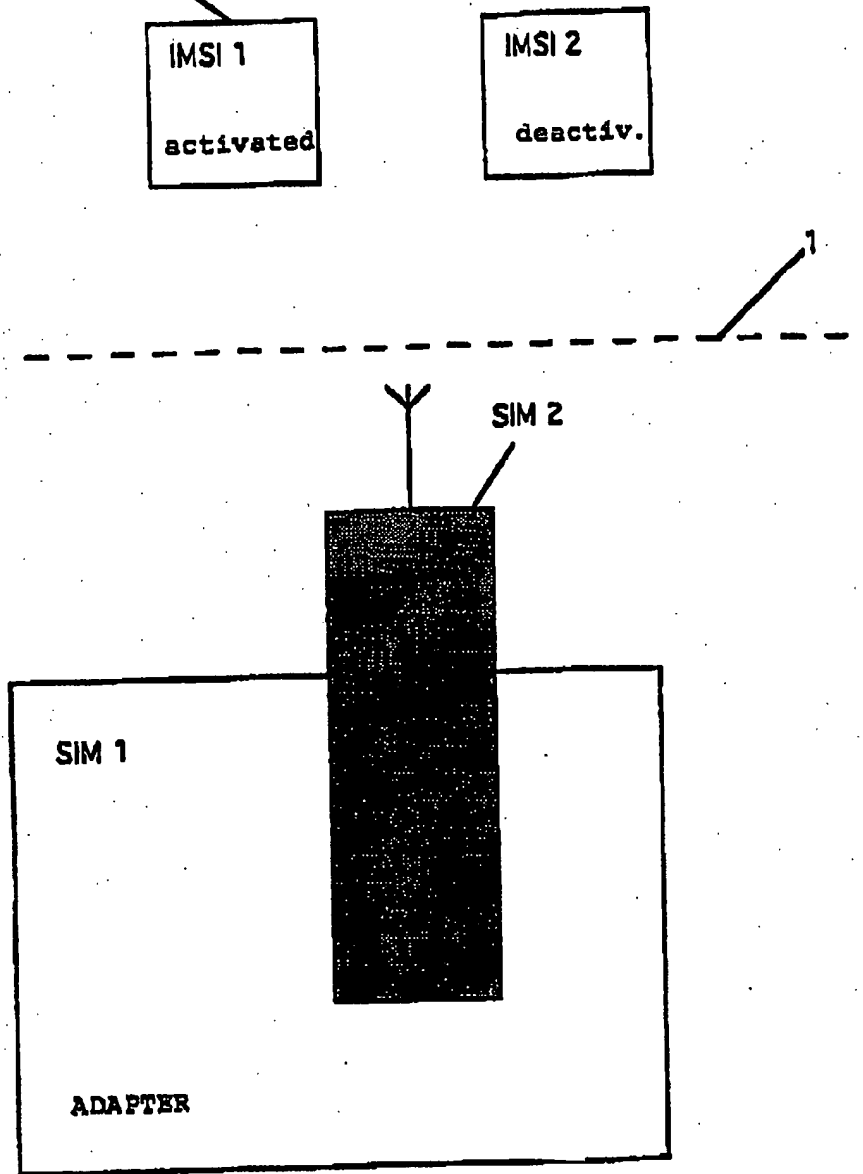


FIG. 1.

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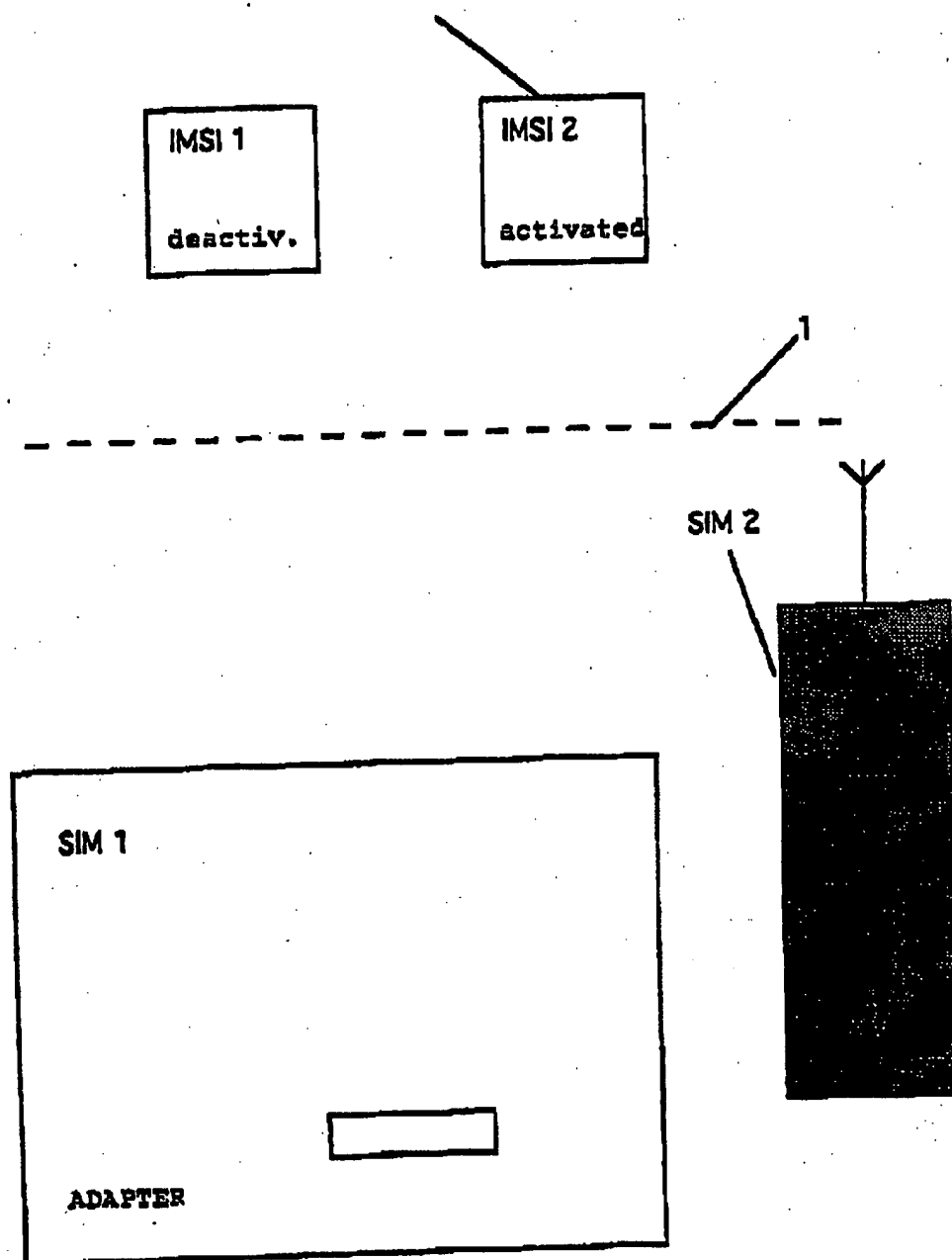


FIG. 2



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 95/00254

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04Q 7/32

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IPC6: H04Q, H04M, H04B

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SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, CLAIMS, JAPIO

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| X | EP 0586081 A1 (NOKIA MOBILE PHONES LTD.), 9 March 1994 (09.03.94), page 3, column 4, line 21 - column 4, line 47; page 4, column 5, line 15 - column 6, line 3, abstract | 1-12 |
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| A | WO 9112698 A1 (MOTOROLA INC.), 22 August 1991 (22.08.91) | 1 |
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| A | EP 0556970 A1 (NOKIA MOBILE PHONES LTD.), 25 August 1993 (25.08.93), abstract | 1 |
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Information on patent family members

30/10/95

International application No.

PCT/FI 95/00254

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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| EP-A1- 0586081 | 09/03/94 | NONE | |
| WD-A1- 9512293 | 04/05/95 | NONE | |
| WD-A1- 9112698 | 22/08/91 | CA-C- 2047192 | 05/09/95 |
| | | EP-A- 0468025 | 29/01/92 |
| | | GB-A- 2241133 | 21/08/91 |
| | | JP-T- 4503747 | 02/07/92 |
| | | TR-A- 24919 | 01/07/92 |
| EP-A1- 0556970 | 25/08/93 | NONE | |

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